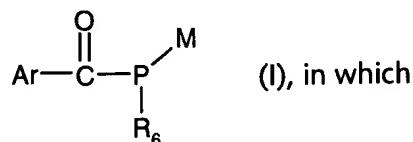


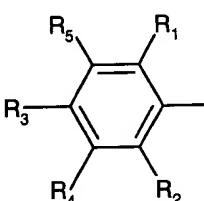
Please amend the above-identified patent application, without prejudice, as follows:

IN THE CLAIMS:

Replace the claims of record with the following:

1. (original) A compound of the formula I

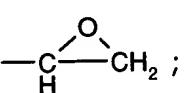


Ar is a group ; or Ar is cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C₁-C₄alkyl and/or C₁-C₄alkoxy;

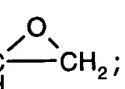
R₁ and R₂ independently of one another are C₁-C₂₀alkyl, OR₁₁, CF₃ or halogen;

R₃, R₄ and R₅ independently of one another are hydrogen, C₁-C₂₀alkyl, OR₁₁ or halogen; or in each case two of the radicals R₁, R₂, R₃, R₄ and R₅ together form C₁-C₂₀alkylene, which can be interrupted by O, S or NR₁₄;

R₆ is C₁-C₂₄alkyl, unsubstituted or substituted by cycloalkenyl, phenyl, CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂, OC(O)R₁₁, OC(O)OR₁₁, N(R₁₄)C(O)N(R₁₄), OC(O)NR₁₄, N(R₁₄)C(O)OR₁₁,

cycloalkyl, halogen, OR₁₁, SR₁₁, N(R₁₂)(R₁₃) or 

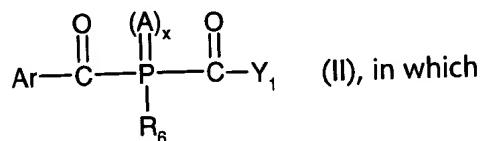
C₂-C₂₄alkyl which is interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by phenyl, OR₁₁, SR₁₁, N(R₁₂)(R₁₃), CN, C(O)R₁₁, C(O)OR₁₁,

C(O)N(R₁₄)₂ and/or 

C₂-C₂₄alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

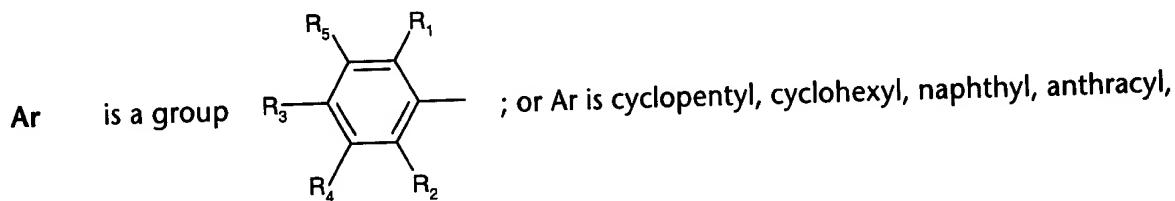
C_5 - C_{24} cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);
 C_7 - C_{24} arylalkyl which is unsubstituted or substituted on the aryl group by C₁-C₁₂alkyl,
C₁-C₁₂alkoxy or halogen;
C₄-C₂₄cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);
or C₈-C₂₄arylalkyl or C₈-C₂₄arylcycloalkenyl;
R₁₁ is H, C₁-C₂₀alkyl, C₂-C₂₀alkenyl, C₃-C₈cycloalkyl, phenyl, benzyl or C₂-C₂₀alkyl, which is interrupted once or more than once by O or S and which is unsubstituted or is substituted by OH and/or SH;
R₁₂ and R₁₃ independently of one another are hydrogen, C₁-C₂₀alkyl, C₃-C₈cycloalkyl, phenyl, benzyl or C₂-C₂₀alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; or R₁₂ and R₁₃ together are C₃-C₅alkylene which is uninterrupted or interrupted by O, S or NR₁₄;
R₁₄ is hydrogen, phenyl, C₁-C₁₂alkyl or C₂-C₁₂alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH; and
M is hydrogen, Li, Na or K.

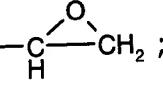
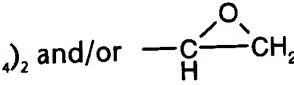
2. (previously amended) A compound of the formula II



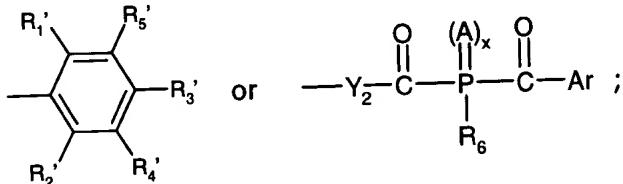
A is O or S;

x is 0 or 1;



cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C₁-C₄alkyl and/or C₁-C₄alkoxy; R₁ and R₂ independently of one another are C₁-C₂₀alkyl, OR₁₁, CF₃ or halogen; R₃, R₄ and R₅ independently of one another are hydrogen, C₁-C₂₀alkyl, OR₁₁ or halogen; or in each case two of the radicals R₁, R₂, R₃, R₄ and R₅ together form C₁-C₂₀alkylene which can be interrupted by O, S or -NR₁₄; R₆ is C₁-C₂₄alkyl, unsubstituted or substituted by C₅-C₂₄cycloalkenyl, phenyl, CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂, OC(O)R₁₁, OC(O)OR₁₁, N(R₁₄)C(O)N(R₁₄), OC(O)NR₁₄, N(R₁₄)C(O)OR₁₁, cycloalkyl, halogen, OR₁₁, SR₁₁, N(R₁₂)(R₁₃) or ; C₂-C₂₄alkyl which is interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by phenyl, OR₁₁, SR₁₁, N(R₁₂)(R₁₃), CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂ and/or ; C₂-C₂₄alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃); C₅-C₂₄cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃); C₇-C₂₄arylalkyl which is unsubstituted or substituted on the aryl group by C₁-C₁₂alkyl, C₁-C₁₂alkoxy or halogen; C₄-C₂₄cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃); or C₈-C₂₄aryl(cyclo)alkyl or C₈-C₂₄aryl(cyclo)alkenyl; R₁₁ is H, C₁-C₂₀alkyl, C₂-C₂₀alkenyl, C₃-C₈cycloalkyl, phenyl, benzyl or C₂-C₂₀alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; R₁₂ and R₁₃ independently of one another are hydrogen, C₁-C₂₀alkyl, C₃-C₈cycloalkyl, phenyl, benzyl or C₂-C₂₀alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH; or R₁₂ and R₁₃ together are C₃-C₅alkylene which is uninterrupted or interrupted by O, S or NR₁₄;

Y_1 is $C_1\text{-}C_{18}$ alkyl which is unsubstituted or substituted by one or more phenyl; $C_1\text{-}C_{18}$ -halogenoalkyl; $C_2\text{-}C_{18}$ alkyl which is interrupted once or more than once by O or S and which can be substituted by OH and/or SH; unsubstituted $C_3\text{-}C_{18}$ cycloalkyl or $C_3\text{-}C_{18}$ cycloalkyl substituted by $C_1\text{-}C_{20}$ alkyl, OR₁₁, CF₃ or halogen; $C_2\text{-}C_{18}$ alkenyl; or Y_1 is OR₁₁, N(R₁₂)(R₁₃) or one of the radicals



or Y_1 is cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, $C_1\text{-}C_4$ alkyl and/or $C_1\text{-}C_4$ alkoxy;

Y_2 is a direct bond; unsubstituted or phenyl-substituted $C_1\text{-}C_{18}$ alkylene; unsubstituted $C_4\text{-}C_{18}$ cycloalkylene or $C_4\text{-}C_{18}$ cycloalkylene substituted by $C_1\text{-}C_{12}$ alkyl, OR₁₁, halogen and/or phenyl; unsubstituted $C_5\text{-}C_{18}$ cycloalkenylene or $C_5\text{-}C_{18}$ cycloalkenylene substituted by $C_1\text{-}C_{12}$ alkyl, phenyl; unsubstituted phenylene or phenylene substituted one to four times by $C_1\text{-}C_{12}$ alkyl, OR₁₁, halogen, -(CO)OR₁₄, -(CO)N(R₁₂)(R₁₃) and/or phenyl;

or Y_2 is a radical or , where these radicals are

unsubstituted or are substituted one to four times on one or both aromatic ring(s) by $C_1\text{-}C_{12}$ alkyl, OR₁₁, halogen and/or phenyl;

Y_3 is O, S, SO, SO₂, CH₂, C(CH₃)₂, CHCH₃, C(CF₃)₂, CO or a direct bond;

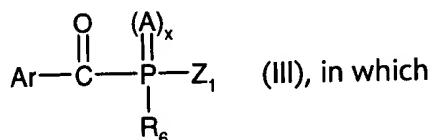
R_{14} is hydrogen, phenyl, $C_1\text{-}C_{12}$ alkyl or $C_2\text{-}C_{12}$ alkyl which is interrupted once or more than once by O or S and which can be substituted by OH and/or SH;

R_1' and R_2' independently of one another have the same meanings as given for R_1 and R_2 ; and R_3' , R_4' and R_5' independently of one another have the same meanings as given for R_3 , R_4 and R_5 ;

or in each case two of the radicals R_1' , R_2' , R_3' , R_4' and R_5' together form $C_1\text{-}C_{20}$ alkylene which may be interrupted by O, S or -NR₁₄;

with the proviso that Y₁ is not identical to Ar and wherein the compounds n-butyl-(2,6-dimethoxybenzoyl)-(2,4,6-trimethylbenzoyl) phosphine oxide, i-butyl-(2,6-dimethoxybenzoyl)-(2,4,6-trimethylbenzoyl) phosphine oxide and (2,6-dimethoxybenzoyl)-(2,6-dimethylbenzoyl)-(2,4,4-trimethylpentyl) phosphine oxide are excluded.

3. (previously amended) A compound of the formula III



A is O or S;

x is 0 or 1;

Ar is a group

; or Ar is cyclopentyl, cyclohexyl, naphthyl, anthracyl,

biphenyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C₁-C₄alkyl and/or C₁-C₄alkoxy;

R₁ and R₂ independently of one another are C₁-C₂₀alkyl, OR₁₁, CF₃ or halogen;

R₃, R₄ and R₅ independently of one another are hydrogen, C₁-C₂₀alkyl, OR₁₁ or halogen;

or in each case two of the radicals R₁, R₂, R₃, R₄ and R₅ together form C₁-C₂₀alkylene which can be interrupted by O, S or -NR₁₄;

R₆ is C₁-C₂₄alkyl, unsubstituted or substituted by C₅-C₂₄cycloalkenyl, phenyl, CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂, OC(O)R₁₁, OC(O)OR₁₁, N(R₁₄)C(O)N(R₁₄), OC(O)NR₁₄, N(R₁₄)C(O)OR₁₁,

cycloalkyl, halogen, OR₁₁, SR₁₁, N(R₁₂)(R₁₃) or

C₂-C₂₄alkyl which is interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by phenyl, OR₁₁, SR₁₁, N(R₁₂)(R₁₃), CN, C(O)R₁₁, C(O)OR₁₁,

C(O)N(R₁₄)₂ and/or

C_2 - C_{24} alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

C_5 - C_{24} cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

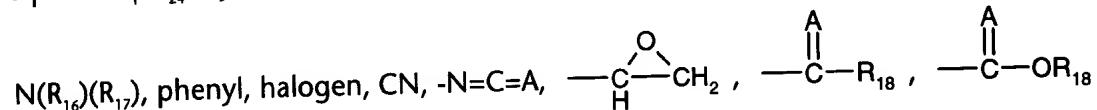
C_7 - C_{24} arylalkyl which is unsubstituted or substituted on the aryl group by C_1 - C_{12} alkyl, C_1 - C_{12} alkoxy or halogen;

C_4 - C_{24} cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃); or C_8 - C_{24} arylcycloalkyl or C_8 - C_{24} arylcycloalkenyl;

R₁₁ is H, C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_3 - C_8 cycloalkyl, phenyl, benzyl or C_2 - C_{20} alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH;

R₁₂ and R₁₃ independently of one another are hydrogen, C_1 - C_{20} alkyl, C_3 - C_8 cycloalkyl, phenyl, benzyl or C_2 - C_{20} alkyl, which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH; or R₁₂ and R₁₃ together are C_3 - C_5 alkylene which is uninterrupted or interrupted by O, S or NR₁₄;

Z₁ is C_1 - C_{24} alkyl, which is unsubstituted or substituted once or more than once by OR₁₅, SR₁₅, N(R₁₆)(R₁₇), phenyl, halogen, CN, -N=C=A,



and/or $\begin{array}{c} \text{A}_1 \\ || \\ \text{C}-\text{N}(\text{R}_{18})_2 \end{array}$ or Z₁ is C_2 - C_{24} alkyl which is interrupted once or more than once by O, S

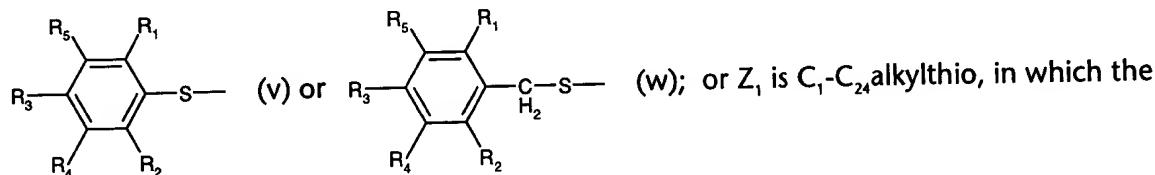
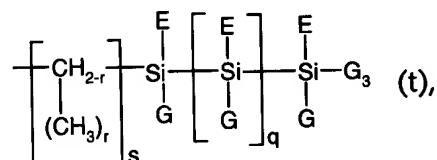
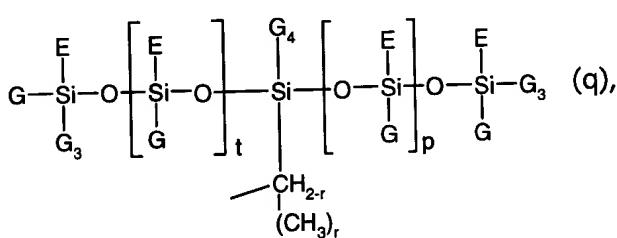
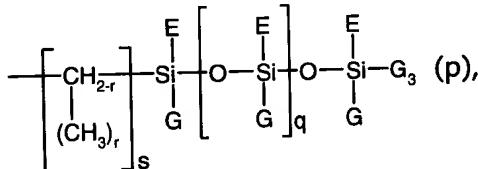
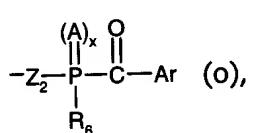
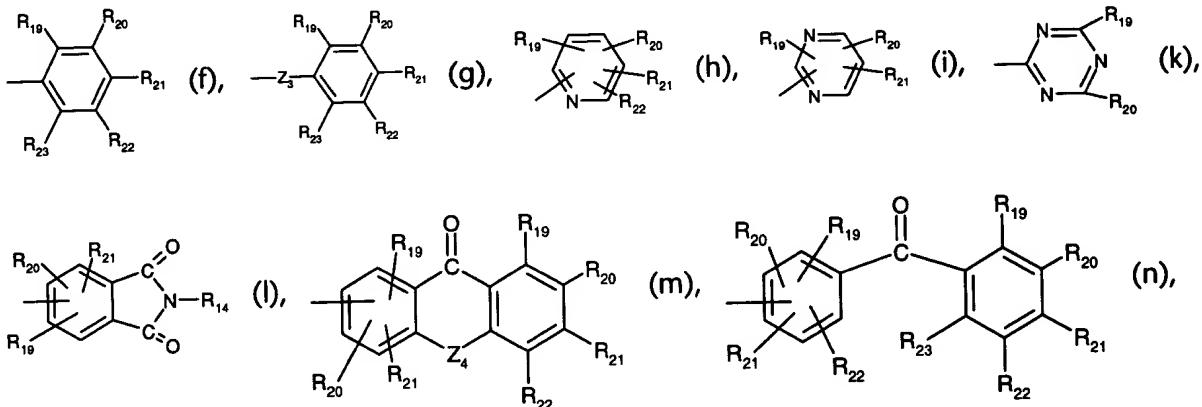
or NR₁₄ and which can be substituted by OR₁₅, SR₁₅, N(R₁₆)(R₁₇), phenyl, halogen, $\begin{array}{c} \text{O} \\ || \\ \text{C}-\text{CH}_2 \end{array}$,

$\begin{array}{c} \text{A} \\ || \\ \text{C}-\text{R}_{18} \end{array}, \quad \begin{array}{c} \text{A} \\ || \\ \text{C}-\text{OR}_{18} \end{array}$ and/or $\begin{array}{c} \text{A}_1 \\ || \\ \text{C}-\text{N}(\text{R}_{18})_2 \end{array}$; or Z₁ is C_1 - C_{24} alkoxy, which is substituted

once or more than once by phenyl, CN, -N=C=A, $\begin{array}{c} \text{O} \\ || \\ \text{C}-\text{CH}_2 \end{array}, \quad \begin{array}{c} \text{A} \\ || \\ \text{C}-\text{R}_{18} \end{array}, \quad \begin{array}{c} \text{A} \\ || \\ \text{C}-\text{OR}_{18} \end{array}$

and/or $\begin{array}{c} \text{A}_1 \\ || \\ \text{C}-\text{N}(\text{R}_{18})_2 \end{array}$; or Z₁ is $\begin{array}{c} \text{A} \\ || \\ \text{C}-\text{OR}_{11}, \quad \begin{array}{c} \text{A}_1 \\ || \\ \text{C}-\text{N}(\text{R}_{16})(\text{R}_{17}), \quad \begin{array}{c} \text{A} \\ || \\ \text{C}-\text{OR}_{11a} \end{array} \end{array}$ or

$\begin{array}{c} A_1 \\ || \\ -C-N(R_{18a})(R_{18b}) \end{array}$; or Z_1 is unsubstituted C_3 - C_{24} cycloalkyl or C_3 - C_{24} cycloalkyl substituted by C_1 - C_{20} alkyl, OR₁₁, CF₃ or halogen; unsubstituted C_2 - C_{24} alkenyl or C_2 - C_{24} alkenyl substituted by C_6 - C_{12} aryl, CN, (CO)OR₁₅ or (CO)N(R₁₈)₂; or Z_1 is C_3 - C_{24} cycloalkenyl or is one of the radicals



alkyl radical is uninterrupted or interrupted once or more than once by nonconsecutive O or S, and is unsubstituted or substituted by OR₁₅, SR₁₅ and/or halogen; with the proviso that Z_1 and R₆ are not identical;

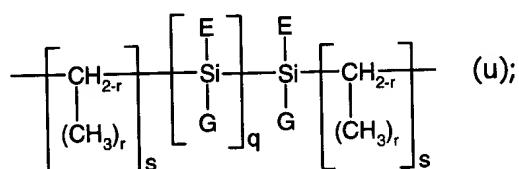
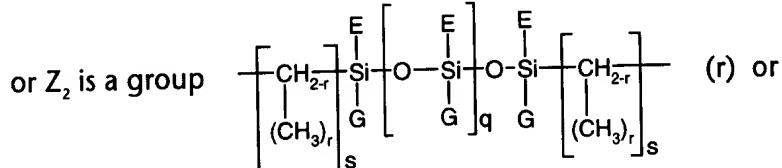
A₁ is O, S or NR_{18a};

Z_2 is $C_1\text{-}C_{24}$ alkylene; $C_2\text{-}C_{24}$ alkylene interrupted once or more than once by O, S or NR_{14} ; $C_2\text{-}C_{24}$ alkenylene; $C_2\text{-}C_{24}$ alkenylene interrupted once or more than once by O, S or NR_{14} ; $C_3\text{-}C_{24}$ cycloalkylene; $C_3\text{-}C_{24}$ cycloalkylene interrupted once or more than once by O, S or NR_{14} ; $C_3\text{-}C_{24}$ cycloalkylene; $C_3\text{-}C_{24}$ cycloalkenylene interrupted once or more than once by O, S or NR_{14} ; where the radicals $C_1\text{-}C_{24}$ alkylene, $C_2\text{-}C_{24}$ alkylene, $C_2\text{-}C_{24}$ alkenylene, $C_3\text{-}C_{24}$ cycloalkylene and $C_3\text{-}C_{24}$ cycloalkenylene are unsubstituted or are substituted by OR_{11} , SR_{11} , $N(R_{12})(R_{13})$ and/or halogen; or Z_2 is one of the radicals



or , where these radicals are unsubstituted or are substituted on the

aromatic by $C_1\text{-}C_{20}$ alkyl; $C_2\text{-}C_{20}$ alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; OR_{11} , SR_{11} , $N(R_{12})(R_{13})$, phenyl, halogen, NO_2 , CN, $(CO)\text{-}OR_{11}$, $(CO)\text{-}R_{11}$, $(CO)\text{-}N(R_{12})(R_{13})$, SO_2R_{24} , OSO_2R_{24} , CF_3 and/or CCl_3 ;



Z_3 is CH_2 , $CH(OH)$, $CH(CH_3)$ or $C(CH_3)_2$;

Z_4 is S, O, CH_2 , $C=O$, NR_{14} or a direct bond;

Z_5 is S, O, CH_2 , $CHCH_3$, $C(CH_3)_2$, $C(CF_3)_2$, SO, SO_2 , CO;

Z_6 and Z_7 independently of one another are CH_2 , $CHCH_3$ or $C(CH_3)_2$;

r is 0, 1 or 2;

s is a number from 1 to 12;

q is a number from 0 to 50;

t and *p* are each a number from 0 to 20;

E, *G*, *G*₃ and *G*₄ independently of one another are unsubstituted C₁-C₁₂alkyl or C₁-C₁₂alkyl substituted by halogen, or are unsubstituted phenyl or phenyl substituted by one or more C₁-C₄alkyl; or are C₂-C₁₂alkenyl;

*R*_{11a} is C₁-C₂₀alkyl substituted once or more than once by OR₁₅ or $\text{---}\overset{\text{O}}{\underset{\text{H}}{\text{C}}}\text{---CH}_2$; or is C₂-C₂₀alkyl

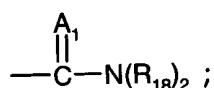
which is interrupted once or more than once by nonconsecutive O atoms and is unsubstituted

or substituted once or more than once by OR₁₅, halogen or $\text{---}\overset{\text{O}}{\underset{\text{H}}{\text{C}}}\text{---CH}_2$; or R_{11a} is C₂-C₂₀alkenyl,

C₃-C₁₂alkynyl; or R_{11a} is C₃-C₁₂cycloalkenyl which is substituted once or more than once by halogen, NO₂, C₁-C₆alkyl, OR₁₁ or C(O)OR₁₈; or C₇-C₁₆arylalkyl or C₈-C₁₆arylcycloalkyl;

*R*₁₄ is hydrogen, phenyl, C₁-C₁₂alkoxy, C₁-C₁₂alkyl or C₂-C₁₂alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH;

*R*₁₅ has one of the meanings given for R₁₁ or is a radical $\text{---}\overset{\text{A}}{\underset{\parallel}{\text{C}}}\text{---R}_{18}$, $\text{---}\overset{\text{A}}{\underset{\text{C}}{\text{---}}}\text{---OR}_{18}$ or



*R*₁₆ and *R*₁₇ independently of one another have one of the meanings given for R₁₂ or are a

radical $\text{---}\overset{\text{A}}{\underset{\parallel}{\text{C}}}\text{---R}_{18}$, $\text{---}\overset{\text{A}}{\underset{\text{C}}{\text{---}}}\text{---OR}_{18}$ or $\text{---}\overset{\text{A}_1}{\underset{\parallel}{\text{C}}}\text{---N}(\text{R}_{18})_2$;

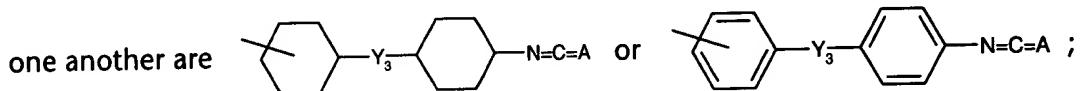
*R*₁₈ is hydrogen, C₁-C₂₄alkyl, C₂-C₁₂alkenyl, C₃-C₈cycloalkyl, phenyl, benzyl; C₂-C₂₀alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH;

*R*_{18a} and *R*_{18b} independently of one another are hydrogen; C₁-C₂₀alkyl, which is substituted once

or more than once by OR₁₅, halogen, styryl, methylstyryl, -N=C=A or $\text{---}\overset{\text{O}}{\underset{\text{H}}{\text{C}}}\text{---CH}_2$; or C₂-C₂₀alkyl,

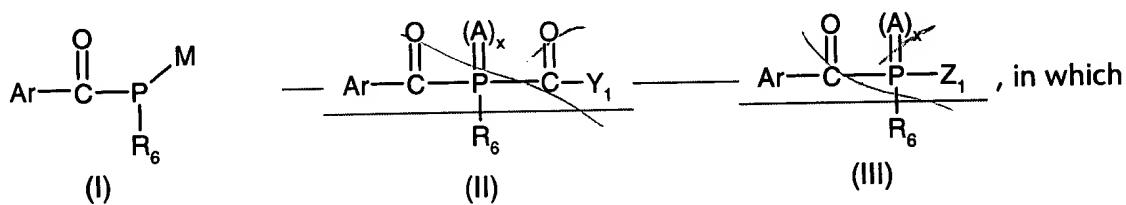
which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted once or more than once by OR₁₅, halogen, styryl, methylstyryl or

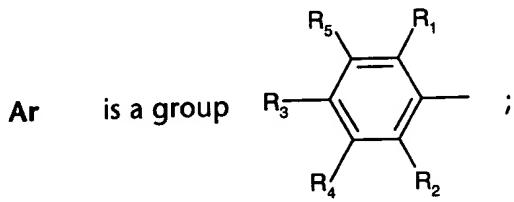
$\text{--C}(\text{H})=\text{CH}_2$; or R_{18a} and R_{18b} are $\text{C}_2\text{-}\text{C}_{12}$ alkenyl; $\text{C}_5\text{-}\text{C}_{12}$ cycloalkyl, which is substituted by $-\text{N}=\text{C}=\text{A}$ or $-\text{CH}_2\text{-N}=\text{C}=\text{A}$ and is additionally unsubstituted or substituted by one or more $\text{C}_1\text{-}\text{C}_4$ alkyl; or R_{18a} and R_{18b} are $\text{C}_6\text{-}\text{C}_{12}$ aryl, unsubstituted or substituted once or more than once by halogen, NO_2 , $\text{C}_1\text{-}\text{C}_6$ alkyl, $\text{C}_2\text{-}\text{C}_4$ alkenyl, OR_{11} , $-\text{N}=\text{C}=\text{A}$, $-\text{CH}_2\text{-N}=\text{C}=\text{A}$ or $\text{C}(\text{O})\text{OR}_{18}$; or R_{18a} and R_{18b} are $\text{C}_7\text{-}\text{C}_{16}$ arylalkyl; or R_{18a} and R_{18b} together are $\text{C}_8\text{-}\text{C}_{16}$ aryl(cycloalkyl); or R_{18a} and R_{18b} independently of one another are $\text{C}_8\text{-}\text{C}_{16}$ arylalkyl; or R_{18a} and R_{18b} together are $\text{C}_8\text{-}\text{C}_{16}$ aryl(cycloalkyl); or R_{18a} and R_{18b} independently of



Y_3 is O , S , SO , SO_2 , CH_2 , $\text{C}(\text{CH}_3)_2$, CHCH_3 , $\text{C}(\text{CF}_3)_2$, (CO) , or a direct bond; R_{19} , R_{20} , R_{21} , R_{22} and R_{23} independently of one another are hydrogen, $\text{C}_1\text{-}\text{C}_{20}$ alkyl; $\text{C}_2\text{-}\text{C}_{20}$ alkyl, which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; or R_{19} , R_{20} , R_{21} , R_{22} and R_{23} are OR_{11} , SR_{11} , $\text{N}(\text{R}_{12})(\text{R}_{13})$, NO_2 , CN , SO_2R_{24} , $\text{OSO}_2\text{R}_{24}$, CF_3 , CCl_3 , halogen; or phenyl which is unsubstituted or substituted once or more than once by $\text{C}_1\text{-}\text{C}_4$ alkyl or $\text{C}_1\text{-}\text{C}_4$ alkoxy; or in each case two of the radicals R_{19} , R_{20} , R_{21} , R_{22} and R_{23} together form $\text{C}_1\text{-}\text{C}_{20}$ alkylene which is uninterrupted or interrupted by O, S or $-\text{NR}_{14}$; R_{24} is $\text{C}_1\text{-}\text{C}_{12}$ alkyl, halogen-substituted $\text{C}_1\text{-}\text{C}_{12}$ alkyl, phenyl, or phenyl substituted by OR_{11} and/or SR_{11} ; with the proviso that R_6 and Z_1 are not identical and wherein the compounds benzyl-n-butyl-(2,6-dimethoxybenzoyl) phosphine oxide and benzyl-n-butyl-(2,4,6-trimethylbenzoyl) phosphine oxide are excluded.

4. (currently amended) 4. A compound of the formula I-II or III





R_1 and R_2 independently of one another are $C_1\text{-}C_8$ alkyl or OR_{11} ;

R_3 , R_4 and R_5 independently of one another are hydrogen or $C_1\text{-}C_8$ alkyl;

R_6 is $C_1\text{-}C_{12}$ alkyl;

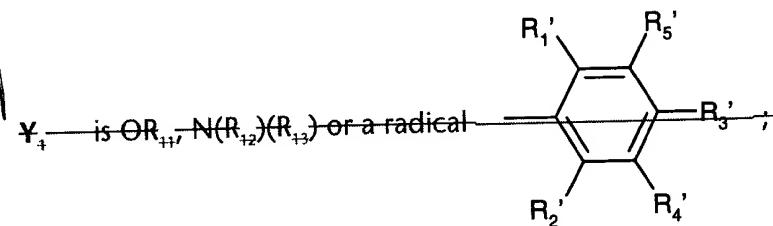
R_{11} is H or $C_1\text{-}C_8$ alkyl;

~~R_{12} and R_{13} independently of one another are hydrogen or $C_1\text{-}C_8$ alkyl;~~

M is hydrogen or Li;

A is O;

\times is T ;



R_1' and R_2' independently of one another have the same meanings given for R_1 and R_2 ; and

R_3' , R_4' and R_5' independently of one another have the same meanings as given for R_3 , R_4 and

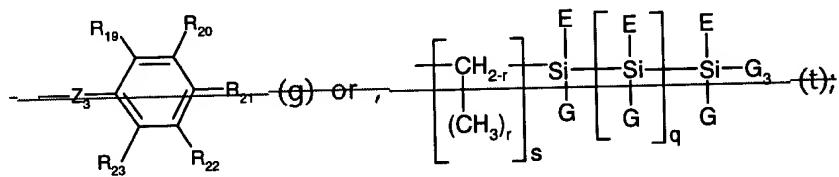
R_5 ;

with the proviso that Y_1 is not identical to Ar ;

Z_1 is $C_1\text{-}C_{12}$ alkyl which is unsubstituted or substituted once or more than once by OR_{15} ,

A
~~phenyl and/or ---C---OR_{18} , or Z_1 is unsubstituted or OR_{15} -substituted $C_3\text{-}C_{24}$ cycloalkyl, or Z_1 is~~

one of the radicals:



Z_3 is CH_2 or $CH(OH)$;

~~r~~ is 0;

~~s~~ is 1;

~~E, G and G₃ independently of one another are unsubstituted C₁-C₄alkyl;~~

~~R₁₅ has one of the meanings given for R₁₁;~~

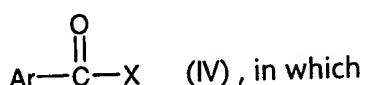
~~R₁₈ is C₁-C₁₂alkyl; and~~

~~R₁₉, R₂₀, R₂₁, R₂₂ and R₂₃ independently of one another are hydrogen or halogen;~~

~~and with the proviso that R₆ and Z₁ are not identical.~~

5. (original) A process for the selective preparation of compounds of the formula I according to claim 1, by

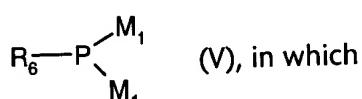
(1) reaction of an acyl halide of the formula IV



C1
Ar is as defined in claim 1, and

X is Cl or Br;

with a dimetalated organophosphine of the formula V



R₆ is as defined in claim 1; and

M₁ is Na, Li or K;

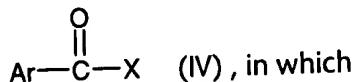
in the molar ratio 1:1; and

(2) where appropriate, subsequent hydrolysis if compounds of the formula I in which M is hydrogen are to be obtained.

6. Cancel

7. (original) A process for the preparation of compounds of the formula II according to claim 2 by

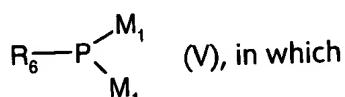
(1) reaction of an acyl halide of the formula IV



Ar is as defined in claim 2, and

X is Cl or Br;

with a dimetalated organophosphine of the formula V

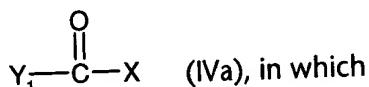


R₆ is as defined in claim 2; and

M₁ is Na, Li or K;

in the molar ratio of approximately 1:1;

(2) subsequent reaction of the product with an acyl halide of the formula IVa



Y₁ is as defined in claim 2; and

X is as defined above;

with the proviso that the acyl halide of the formula IV is not identical to the acyl halide of the formula IVa;

in the molar ratio of approximately 1:1; and,

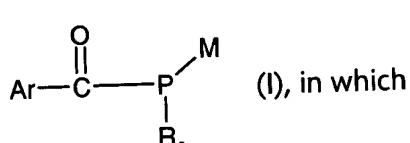
(3) if compounds of the formula II, in which A is oxygen or sulfur are to be obtained,

subsequent oxidation or sulfurization of the phosphine compounds.

8. (original) A process for the preparation of compounds of the formula II according to claim 2,

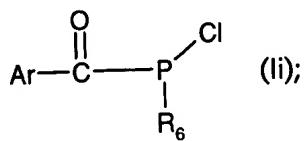
in which A is oxygen and x is 1, by

(1) reaction of a compound of the formula (I), according to claim 1

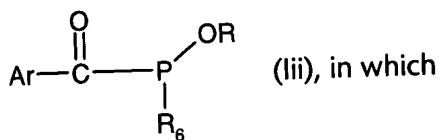


Ar, M and R₆ are as defined in claim 1,

with phosgene to give the corresponding phosphine chloride (ii)

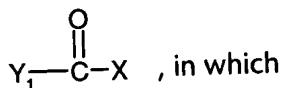


(2) subsequent reaction with an alcohol to give the compound of the formula (iii)



R is the radical of an alcohol, in particular C₁-C₁₂alkyl, C₅-C₈cycloalkyl or benzyl; and

(3) reaction of the resulting compound of the formula (iii) with an acyl halide



C
|

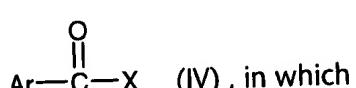
Y₁ is as defined in claim 2, and

X is Cl or Br,

to give the compound of the formula II but in which Ar and Y₁ are not necessarily different,

9. (original) A process for the preparation of compounds of the formula III

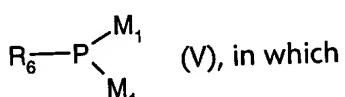
(1) by reaction of an acyl halide of the formula IV



Ar is as defined in claim 3, and

X is Cl or Br;

with a dimetalated organophosphine of the formula V



R₆ is as defined in claim 3; and

M₁ is Na, Li or K;

in the molar ratio of approximately 1:1;

(2) subsequent reaction of the product with a compound of the formula VI or VI'
 Z_1-X (VI) Z_1-X' (VI'), in which

Z_1 is as defined in claim 3; and

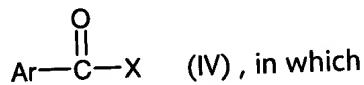
X is as defined above; and

X' is $-N=C=A$, $-N=C=N=Z_1$, $-C(=O)-CH_2$ or $-CHO$;

with the proviso that, Z_1 is not identical to R_6 ;
in the molar ratio of approximately 1:1; and, in the case where Z_1 is not a group (v), (w) or C_1-
 C_{12} alkylthio, and
(3) compounds of the formula III, in which A is oxygen or sulfur are to be obtained,
subsequent oxidation or sulfurization of the resulting phosphine compounds.

10. (original) A process for the preparation of compounds of the formula III, according to claim
3,

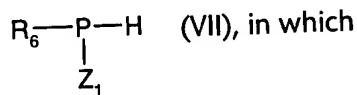
(1) by reaction of an acyl halide of the formula IV



Ar is as defined in claim 1, and

X is Cl or Br;

with an unsymmetrical phosphine of the formula VII



R_6 is as defined in claim 1, and

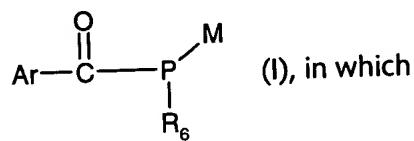
Z_1 is as defined in claim 3 with the proviso that R_6 and Z_1 are not identical;

in the molar ratio of approximately 1:1, in the presence of a base or an organolithium
compound, to give the corresponding acylphosphine; and

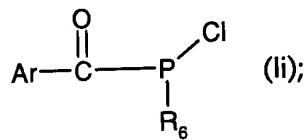
(2) subsequent oxidation or sulfurization of the thus obtained acylphosphine.

11. (original) A process for the preparation of compounds of the formula III according to claim
3, in which A is oxygen and x is 1, by

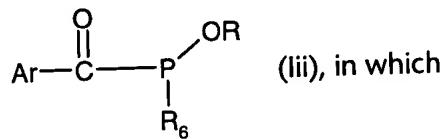
(1) reaction of the compound of the formula (I), according to claim 1



Ar, M and R₆ is as defined in claim 1,
with phosgene to give the corresponding phosphine chloride (II)



(2) subsequent reaction with an alcohol to give the compound of the formula (III)



C | R is the radical of an alcohol, in particular C₁-C₁₂alkyl, C₅-C₈cycloalkyl or benzyl; and

(3) reaction of the resulting compound of the formula (III) with an organoylhalide

Z₁-X, in which

Z₁ is as defined in claim 3, but is not identical to R₆ from the formula (I) ist, and

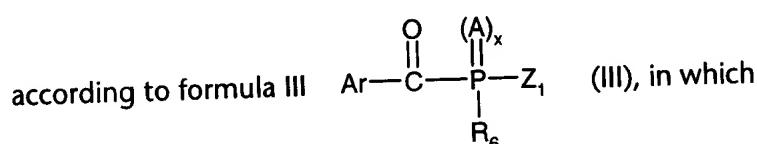
X is Cl or Br,

to give the compound of the formula III.

12. (previously amended) A photocurable composition comprising

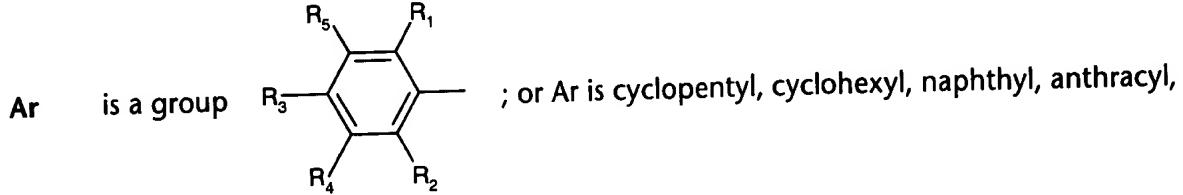
(a) at least one ethylenically unsaturated photopolymerizable compound and

(b) at least one compound of the formula II according to claim 2 or at least one compound

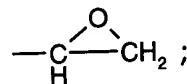


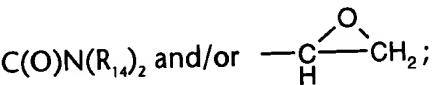
A is O or S;

x is 0 or 1;



biphenylyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C₁-C₄alkyl and/or C₁-C₄alkoxy; R₁ and R₂ independently of one another are C₁-C₂₀alkyl, OR₁₁, CF₃ or halogen; R₃, R₄ and R₅ independently of one another are hydrogen, C₁-C₂₀alkyl, OR₁₁ or halogen; or in each case two of the radicals R₁, R₂, R₃, R₄ and R₅ together form C₁-C₂₀alkylene which can be interrupted by O, S or -NR₁₄:

R₆ is C₁-C₂₄alkyl, unsubstituted or substituted by C₅-C₂₄cycloalkenyl, phenyl, CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂, OC(O)R₁₁, OC(O)OR₁₁, N(R₁₄)C(O)N(R₁₄), OC(O)NR₁₄, N(R₁₄)C(O)OR₁₁, cycloalkyl, halogen, OR₁₁, SR₁₁, N(R₁₂)(R₁₃) or 

C₂-C₂₄alkyl which is interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by phenyl, OR₁₁, SR₁₁, N(R₁₂)(R₁₃), CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂ and/or 

C₂-C₂₄alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

C₅-C₂₄cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

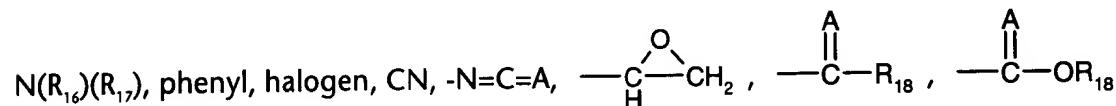
C₇-C₂₄arylalkyl which is unsubstituted or substituted on the aryl group by C₁-C₁₂alkyl, C₁-C₁₂alkoxy or halogen;

C₄-C₂₄cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃); or C₈-C₂₄aryl(cycloalkyl or C₈-C₂₄arylcycloalkenyl;

R_{11} is H, C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_3 - C_8 cycloalkyl, phenyl, benzyl or C_2 - C_{20} alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH;

R_{12} and R_{13} independently of one another are hydrogen, C_1 - C_{20} alkyl, C_3 - C_8 cycloalkyl, phenyl, benzyl or C_2 - C_{20} alkyl, which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH; or R_{12} and R_{13} together are C_3 - C_5 alkylene which is uninterrupted or interrupted by O, S or NR_{14} ;

Z_1 is C_1 - C_{24} alkyl, which is unsubstituted or substituted once or more than once by OR_{15} , SR_{15} ,



and/or $\begin{array}{c} A_1 \\ || \\ -C-N(R_{18})_2 \end{array}$ or Z_1 is C_2 - C_{24} alkyl which is interrupted once or more than once by O, S

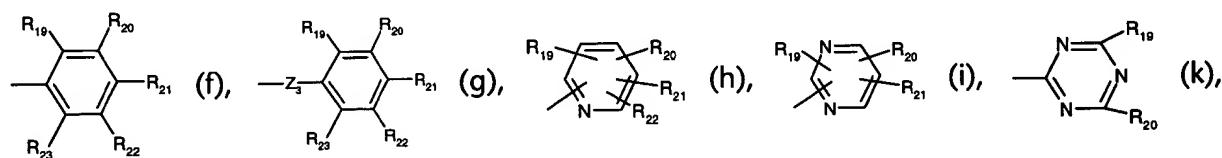
or NR_{14} and which can be substituted by OR_{15} , SR_{15} , $N(R_{16})(R_{17})$, phenyl, halogen, $\begin{array}{c} O \\ || \\ -C-H-CH_2 \end{array}$,

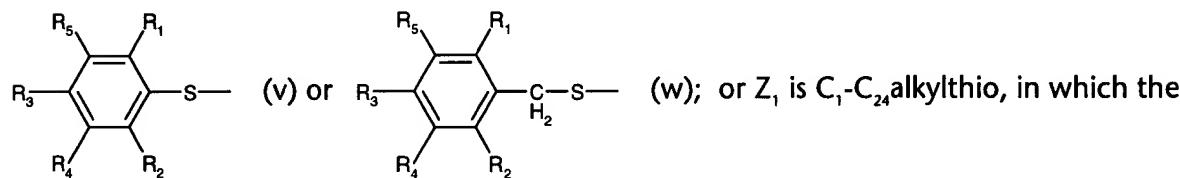
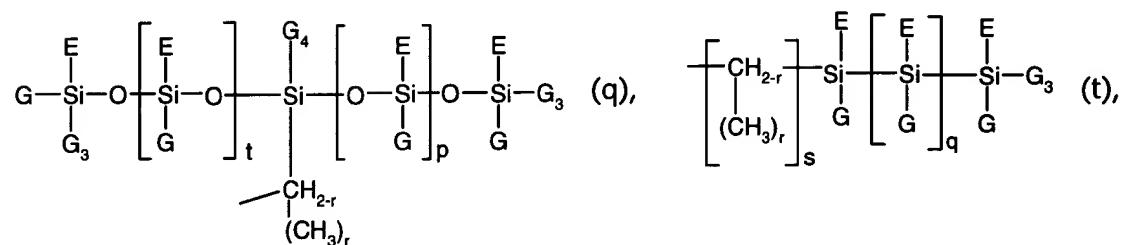
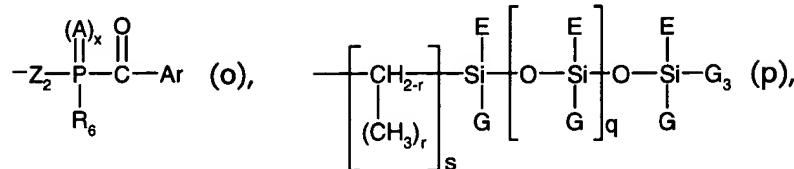
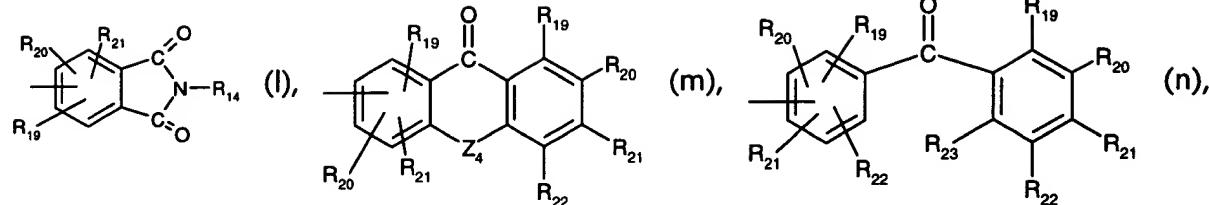
$\begin{array}{c} A \\ || \\ -C-R_{18} \end{array}$, $\begin{array}{c} A \\ || \\ -C-OR_{18} \end{array}$ and/or $\begin{array}{c} A_1 \\ || \\ -C-N(R_{18})_2 \end{array}$; or Z_1 is C_1 - C_{24} alkoxy, which is substituted

once or more than once by phenyl, CN, $-N=C=A$, $\begin{array}{c} O \\ || \\ -C-H-CH_2 \end{array}$, $\begin{array}{c} A \\ || \\ -C-R_{18} \end{array}$, $\begin{array}{c} A \\ || \\ -C-OR_{18} \end{array}$

and/or $\begin{array}{c} A_1 \\ || \\ -C-N(R_{18})_2 \end{array}$; or Z_1 is $\begin{array}{c} A \\ || \\ -C-OR_{11} \end{array}$, $\begin{array}{c} A_1 \\ || \\ -C-N(R_{16})(R_{17}) \end{array}$, $\begin{array}{c} A \\ || \\ -C-OR_{11a} \end{array}$ or

$\begin{array}{c} A_1 \\ || \\ -C-N(R_{18a})(R_{18b}) \end{array}$; or Z_1 is unsubstituted C_3 - C_{24} cycloalkyl or C_3 - C_{24} cycloalkyl substituted by C_1 - C_{20} alkyl, OR_{11} , CF_3 or halogen; unsubstituted C_2 - C_{24} alkenyl or C_2 - C_{24} alkenyl substituted by C_6 - C_{12} aryl, CN, $(CO)OR_{15}$ or $(CO)N(R_{18})_2$; or Z_1 is C_3 - C_{24} cycloalkenyl or is one of the radicals





alkyl radical is uninterrupted or interrupted once or more than once by nonconsecutive O or S, and is unsubstituted or substituted by OR_{15} , SR_{15} and/or halogen; with the proviso that Z_1 and R_6 are not identical;

A_1 is O, S or NR_{18a} ;

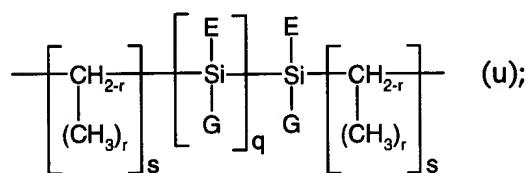
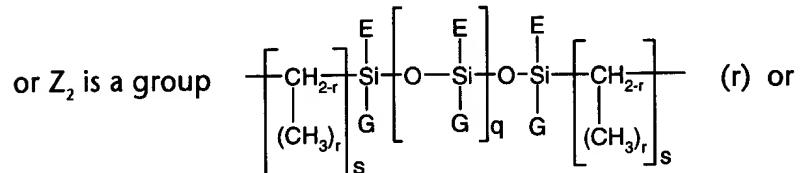
Z_2 is C_1-C_{24} alkylene; C_2-C_{24} alkylene interrupted once or more than once by O, S or NR_{14} ; C_2-C_{24} alkenylene; C_2-C_{24} alkenylene interrupted once or more than once by O, S or NR_{14} ; C_3-C_{24} cycloalkylene; C_3-C_{24} cycloalkylene interrupted once or more than once by O, S or NR_{14} ; C_3-C_{24} cycloalkylene; C_3-C_{24} cycloalkenylene interrupted once or more than once by O, S or NR_{14} ;

where the radicals C_1 - C_{24} alkylene, C_2 - C_{24} alkylene, C_2 - C_{24} alkenylene, C_3 - C_{24} cycloalkylene and C_3 - C_{24} cycloalkenylene are unsubstituted or are substituted by OR_{11} , SR_{11} , $N(R_{12})(R_{13})$ and/or halogen; or Z_2 is one of the radicals



or

, where these radicals are unsubstituted or are substituted on the aromatic by C_1 - C_{20} alkyl; C_2 - C_{20} alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; OR_{11} , SR_{11} , $N(R_{12})(R_{13})$, phenyl, halogen, NO_2 , CN, (CO)- OR_{11} , (CO)- R_{11} , (CO)- $N(R_{12})(R_{13})$, SO_2R_{24} , OSO_2R_{24} , CF_3 and/or CCl_3 ;



Z_3 is CH_2 , $CH(OH)$, $CH(CH_3)$ or $C(CH_3)_2$;

Z_4 is S, O, CH_2 , $C=O$, NR_{14} or a direct bond;

Z_5 is S, O, CH_2 , $CHCH_3$, $C(CH_3)_2$, $C(CF_3)_2$, SO, SO_2 , CO;

Z_6 and Z_7 independently of one another are CH_2 , $CHCH_3$ or $C(CH_3)_2$;

r is 0, 1 or 2;

s is a number from 1 to 12;

q is a number from 0 to 50;

t and p are each a number from 0 to 20;

E, G, G₃ and G₄ independently of one another are unsubstituted C₁-C₁₂alkyl or C₁-C₁₂alkyl substituted by halogen, or are unsubstituted phenyl or phenyl substituted by one or more C₁-C₄alkyl; or are C₂-C₁₂alkenyl;

R_{11a} is C₁-C₂₀alkyl substituted once or more than once by OR₁₅ or $\text{---C}(\text{O})\text{---CH}_2$; or is C₂-C₂₀alkyl

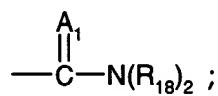
which is interrupted once or more than once by nonconsecutive O atoms and is unsubstituted

or substituted once or more than once by OR₁₅, halogen or $\text{---C}(\text{O})\text{---CH}_2$; or R_{11a} is C₂-C₂₀alkenyl,

C₃-C₁₂alkynyl; or R_{11a} is C₃-C₁₂cycloalkenyl which is substituted once or more than once by halogen, NO₂, C₁-C₆alkyl, OR₁₁ or C(O)OR₁₈; or C₇-C₁₆arylalkyl or C₈-C₁₆arylcycloalkyl;

R₁₄ is hydrogen, phenyl, C₁-C₁₂alkoxy, C₁-C₁₂alkyl or C₂-C₁₂alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH;

R₁₅ has one of the meanings given for R₁₁ or is a radical $\text{---C}(\text{A})\text{---R}_{18}$, $\text{---C}(\text{A})\text{---OR}_{18}$ or



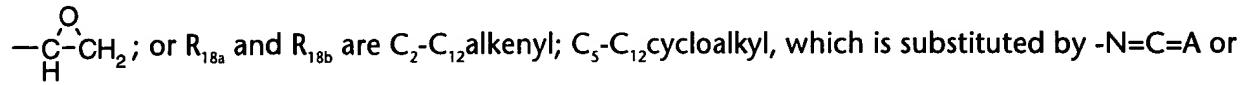
R₁₆ and R₁₇ independently of one another have one of the meanings given for R₁₂ or are a

radical $\text{---C}(\text{A})\text{---R}_{18}$, $\text{---C}(\text{A})\text{---OR}_{18}$ or $\text{---C}(\text{A}_1)\text{---N}(\text{R}_{18})_2$;

R₁₈ is hydrogen, C₁-C₂₄alkyl, C₂-C₁₂alkenyl, C₃-C₈cycloalkyl, phenyl, benzyl; C₂-C₂₀alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH;

R_{18a} and R_{18b} independently of one another are hydrogen; C₁-C₂₀alkyl, which is substituted once or more than once by OR₁₅, halogen, styryl, methylstyryl, -N=C=A or $\text{---C}(\text{O})\text{---CH}_2$; or C₂-C₂₀alkyl,

which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted once or more than once by OR₁₅, halogen, styryl, methylstyryl or



-CH₂-N=C=A and is additionally unsubstituted or substituted by one or more C₁-C₄alkyl; or R_{18a}

and R_{18b} are C_6 - C_{12} aryl, unsubstituted or substituted once or more than once by halogen, NO_2 , C_1 - C_6 alkyl, C_2 - C_4 alkenyl, OR_{11} , $-N=C=A$, $-CH_2-N=C=A$ or $C(O)OR_{18}$; or R_{18a} and R_{18b} are C_7 - C_{16} arylalkyl; or R_{18a} and R_{18b} together are C_8 - C_{16} arylcloalkyl; or R_{18a} and R_{18b} independently of one another are



Y_3 is O , S , SO_2 , CH_2 , $C(CH_3)_2$, $CHCH_3$, $C(CF_3)_2$, (CO) , or a direct bond;

R_{19} , R_{20} , R_{21} , R_{22} and R_{23} independently of one another are hydrogen, C_1 - C_{20} alkyl; C_2 - C_{20} alkyl, which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; or R_{19} , R_{20} , R_{21} , R_{22} and R_{23} are OR_{11} , SR_{11} , $N(R_{12})(R_{13})$, NO_2 , CN , SO_2R_{24} , OSO_2R_{24} , CF_3 , CCl_3 , halogen; or phenyl which is unsubstituted or substituted once or more than once by C_1 - C_4 alkyl or C_1 - C_4 alkoxy; or in each case two of the radicals R_{19} , R_{20} , R_{21} , R_{22} and R_{23} together form C_1 - C_{20} alkylene which is uninterrupted or interrupted by O, S or $-NR_{14}$;

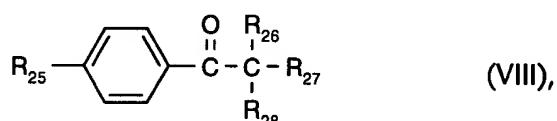
R_{24} is C_1 - C_{12} alkyl, halogen-substituted C_1 - C_{12} alkyl, phenyl, or phenyl substituted by OR_{11} and/or SR_{11} ;

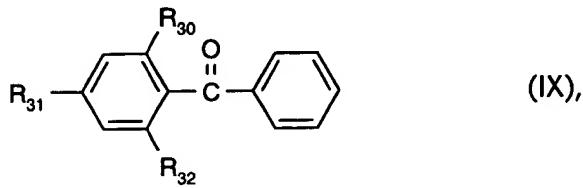
with the proviso that R_6 and Z_1 are not identical,

as photoinitiator.

13. (original) A photocurable composition according to claim 12, comprising, in addition to components (a) and (b), further photoinitiators (c) and/or further additives (d).

14. (original) A photocurable composition as claimed in claim 13, comprising, as further photoinitiator (c), at least one compound of the formula VIII, IX, X, XI





R_{25} is hydrogen, C_1 - C_{18} alkyl, C_1 - C_{18} alkoxy, $-OCH_2CH_2-OR_{29}$, morpholino, SCH_3 , a

group $\text{H}_2\text{C}=\overset{\text{CH}_3}{\underset{|}{\text{C}}}-$ or a group $\text{G}_1-\left[\text{CH}_2-\overset{\text{CH}_3}{\underset{|}{\text{C}}}-\right]_n \text{G}_2$;

n has a value from 2 to 10;

G_1 and G_2 , independently of one another are end groups of the polymeric unit, in particular hydrogen or CH_3 ;

R₂₆ is hydroxyl, C₁-C₁₆ alkoxy, morpholino, dimethylamino or -O(CH₂CH₂O)_m-C₁-C₁₆ alkyl;

R_{27} and R_{28} independently of one another are hydrogen, C_1 - C_6 alkyl, phenyl, benzyl, C_1 - C_{16} alkoxy or $-O(CH_2CH_2O)_m-C_1$ - C_{16} alkyl, or R_{27} and R_{28} together with the carbon atom to which they are bonded form a cyclohexyl ring;

m is a number from 1-20;

where R₂₆, R₂₇ and R₂₈ are not all C₁-C₁₆ alkoxy or -O(CH₂CH₂O)_m-C₁-C₁₆ alkyl at the same time, and

R_{29} is hydrogen, ---C=CH_2 or ---C---C=CH_2 ;

R_{30} and R_{32} independently of one another are hydrogen or methyl;

R_{31} is hydrogen, methyl or phenylthio, where the phenyl ring of the phenylthio radical is unsubstituted or substituted by C_1 - C_4 alkyl in the 4-, 2-, 2,4- or 2,4,6-position;

R_{33} and R_{34} independently of one another are C_1-C_{20} alkyl, cyclohexyl, cyclopentyl, phenyl, naphthyl or biphenyl, where these radicals are unsubstituted or are substituted by halogen, C_1-C_{20}

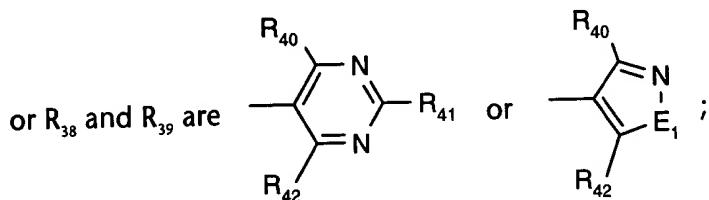
C_{12} alkyl and/or C_1 - C_{12} alkoxy, or R_{33} is an S- or N-containing 5- or 6-membered heterocyclic ring,

or are $\text{---C}(\text{O})\text{---R}_{35}$;

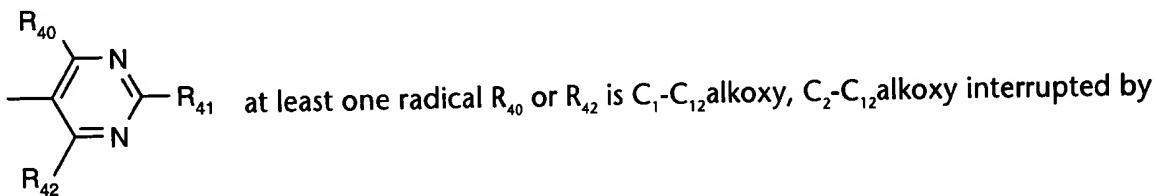
R_{35} is cyclohexyl, cyclopentyl, phenyl, naphthyl or biphenyl, these radicals being unsubstituted or substituted by halogen, C_1 - C_4 alkyl and/or C_1 - C_4 alkoxy, or R_{35} is an S- or N-containing 5- or 6-membered heterocyclic ring;

R_{36} and R_{37} , independently of one another are unsubstituted cyclopentadienyl or cyclopentadienyl substituted once, twice or three times by C_1 - C_{18} alkyl, C_1 - C_{18} alkoxy, cyclopentyl, cyclohexyl or halogen; and

R_{38} and R_{39} , independently of one another are phenyl which is substituted in at least one of the two ortho positions relative to the titanium-carbon bond by fluorine atoms or CF_3 , and which on the aromatic ring may contain, as further substituents, unsubstituted pyrrolinyl or pyrrolinyl substituted by one or two C_1 - C_{12} alkyl, di(C_1 - C_{12} alkyl)aminomethyl, morpholinomethyl, C_2 - C_4 alkenyl, methoxymethyl, ethoxymethyl, trimethylsilyl, formyl, methoxy or phenyl; or polyoxaalkyl,



R_{40} , R_{41} and R_{42} independently of one another are hydrogen, halogen, C_2 - C_{12} alkenyl, C_1 - C_{12} alkoxy, C_2 - C_{12} alkoxy interrupted by one to four O atoms, cyclohexyloxy, cyclopentyloxy, phenoxy, benzyloxy, unsubstituted phenyl or phenyl substituted by C_1 - C_4 alkoxy, halogen, phenylthio or C_1 - C_4 -alkylthio; or biphenyl,
where R_{40} and R_{42} are not both hydrogen at the same time and in the radical



E_1 is O, S or NR_{43} ; and

R_{43} is C_1-C_6 alkyl, phenyl or cyclohexyl.

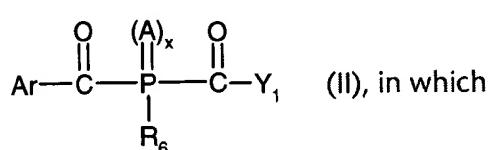
15. (original) A process for the photopolymerization of nonvolatile monomeric, oligomeric or polymeric compounds having at least one ethylenically unsaturated double bond, which comprises irradiating a composition according to claim 12 with light in the range from 200 to 600 nm.

16. (original) A process according to claim 15 for the preparation of pigmented and nonpigmented surface coatings, printing inks, screen printing inks, offset printing inks, flexographic printing inks, powder coatings, printing plates, adhesives, dental materials, optical waveguides, optical switches, colour testing systems, composite materials, gel coats, glass-fibre cable coatings, screen printing stencils, resist materials, colour filters, for the encapsulation of electrical and electronic components, for the preparation of magnetic recording materials, of three-dimensional objects by means of stereolithography, of photographic reproductions, image recording material, for holographic recordings, for the preparation of decolouring materials, for the preparation of image recording materials using microcapsules.

17. (original) A coated substrate which has been coated on at least one surface with a composition according to claim 12.

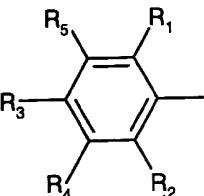
18. (original) A process for the photographic production of relief images in which a coated substrate according to claim 17 is subjected to imagewise exposure and then the unexposed portions are removed with a solvent.

19. (new) A process for the preparation of bisacylphosphine oxides or sulfides of formula II



A is O or S;

x is 0 or 1;

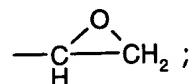
Ar is a group  ; or Ar is cyclopentyl, cyclohexyl, naphthyl, anthracyl,

biphenylyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C₁-C₄alkyl and/or C₁-C₄alkoxy;

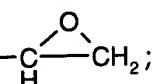
R₁ and R₂ independently of one another are C₁-C₂₀alkyl, OR₁₁, CF₃ or halogen;

R₃, R₄ and R₅ independently of one another are hydrogen, C₁-C₂₀alkyl, OR₁₁ or halogen; or in each case two of the radicals R₁, R₂, R₃, R₄ and R₅ together form C₁-C₂₀alkylene which can be interrupted by O, S or -NR₁₄;

C
R₆ is C₁-C₂₄alkyl, unsubstituted or substituted by C₅-C₂₄cycloalkenyl, phenyl, CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂, OC(O)R₁₁, OC(O)OR₁₁, N(R₁₄)C(O)N(R₁₄), OC(O)NR₁₄, N(R₁₄)C(O)OR₁₁,

cycloalkyl, halogen, OR₁₁, SR₁₁, N(R₁₂)(R₁₃) or 

C₂-C₂₄alkyl which is interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by phenyl, OR₁₁, SR₁₁, N(R₁₂)(R₁₃), CN, C(O)R₁₁, C(O)OR₁₁,

C(O)N(R₁₄)₂ and/or 

C₂-C₂₄alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

C₅-C₂₄cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

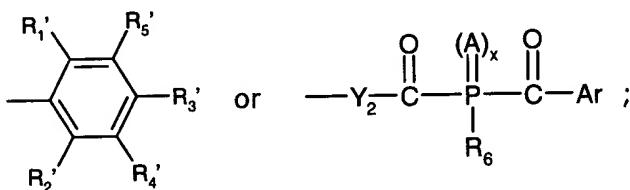
C₇-C₂₄arylalkyl which is unsubstituted or substituted on the aryl group by C₁-C₁₂alkyl, C₁-C₁₂alkoxy or halogen;

C₄-C₂₄cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃); or C₈-C₂₄aryl(cycloalkyl or C₈-C₂₄arylcycloalkenyl;

R_{11} is H, C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_3 - C_8 cycloalkyl, phenyl, benzyl or C_2 - C_{20} alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH;

R_{12} and R_{13} independently of one another are hydrogen, C_1 - C_{20} alkyl, C_3 - C_8 cycloalkyl, phenyl, benzyl or C_2 - C_{20} alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH; or R_{12} and R_{13} together are C_3 - C_5 alkylene which is uninterrupted or interrupted by O, S or NR_{14} ;

Y_1 is C_1 - C_{18} alkyl which is unsubstituted or substituted by one or more phenyl; C_1 - C_{18} halogenoalkyl; C_2 - C_{18} alkyl which is interrupted once or more than once by O or S and which can be substituted by OH and/or SH; unsubstituted C_3 - C_{18} cycloalkyl or C_3 - C_{18} cycloalkyl substituted by C_1 - C_{20} alkyl, OR_{11} , CF_3 or halogen; C_2 - C_{18} alkenyl; or Y_1 is OR_{11} , $N(R_{12})(R_{13})$ or one of the radicals



or Y_1 is cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C_1 - C_4 alkyl and/or C_1 - C_4 alkoxy;

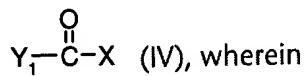
Y_2 is a direct bond; unsubstituted or phenyl-substituted C_1 - C_{18} alkylene; unsubstituted C_4 - C_{18} -cycloalkylene or C_4 - C_{18} cycloalkylene substituted by C_1 - C_{12} alkyl, OR_{11} , halogen and/or phenyl; unsubstituted C_5 - C_{18} cycloalkenylene or C_5 - C_{18} cycloalkenylene substituted by C_1 - C_{12} alkyl, OR_{11} , halogen and/or phenyl; unsubstituted phenylene or phenylene substituted one to four times by C_1 - C_{12} alkyl, OR_{11} , halogen, -(CO)OR₁₄, -(CO)N(R₁₂)(R₁₃) and/or phenyl;

or Y_2 is a radical
or , where these radicals are

unsubstituted or are substituted one to four times on one or both aromatic ring(s) by C_1 - C_{12} alkyl, OR_{11} , halogen and/or phenyl;

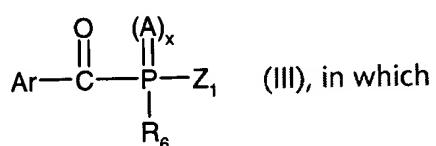
Y_3 is O, S, SO, SO_2 , CH_2 , $C(CH_3)_2$, $CHCH_3$, $C(CF_3)_2$, CO or a direct bond;

R_{14} is hydrogen, phenyl, C_1 - C_{12} alkyl or C_2 - C_{12} alkyl which is interrupted once or more than once by O or S and which can be substituted by OH and/or SH;
 R_1' and R_2' independently of one another have the same meanings as given for R_1 and R_2 ; and
 R_3' , R_4' and R_5' independently of one another have the same meanings as given for R_3 , R_4 and R_5 ;
or in each case two of the radicals R_1' , R_2' , R_3' , R_4' and R_5' together form C_1 - C_{20} alkylene which may be interrupted by O, S or $-NR_{14}$;
with the proviso that Y_1 is not identical to Ar;
by reacting an alkylacylphosphine compound of formula I according to claim 1 with an acid halide of the formula (IV)



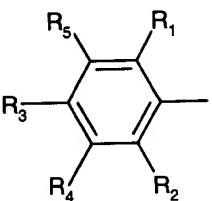
X is Cl or Br;
in a molar ratio of about 1:1, optionally in a solvent, at a reaction temperature from about -60°C to about $+120^\circ\text{C}$ to give a phosphine compound of formula II, wherein x is 0, and optionally, subsequent oxidation or sulfurization of the resulting phosphine compound to give the corresponding oxide or sulfide compound wherein x is 1 and A is O or S.

20. (new) A process for the preparation of monoacylphosphine oxides or sulfides of formula III



A is O or S;

x is 0 or 1;

Ar is a group ; or Ar is cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenylyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals

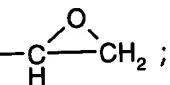
cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C₁-C₄alkyl and/or C₁-C₄alkoxy;

R₁ and R₂ independently of one another are C₁-C₂₀alkyl, OR₁₁, CF₃ or halogen;

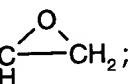
R₃, R₄ and R₅ independently of one another are hydrogen, C₁-C₂₀alkyl, OR₁₁ or halogen;

or in each case two of the radicals R₁, R₂, R₃, R₄ and R₅ together form C₁-C₂₀alkylene which can be interrupted by O, S or NR₁₄;

R₆ is C₁-C₂₄alkyl, unsubstituted or substituted by C₅-C₂₄cycloalkenyl, phenyl, CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂, OC(O)R₁₁, OC(O)OR₁₁, N(R₁₄)C(O)N(R₁₄), OC(O)NR₁₄, N(R₁₄)C(O)OR₁₁,

cycloalkyl, halogen, OR₁₁, SR₁₁, N(R₁₂)(R₁₃) or  ;

C₂-C₂₄alkyl which is interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by phenyl, OR₁₁, SR₁₁, N(R₁₂)(R₁₃), CN, C(O)R₁₁, C(O)OR₁₁,

C(O)N(R₁₄)₂ and/or  ;

C₂-C₂₄alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

C₅-C₂₄cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

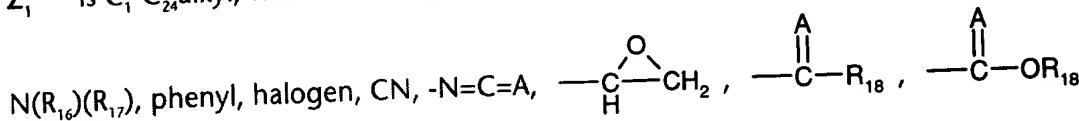
C₇-C₂₄arylalkyl which is unsubstituted or substituted on the aryl group by C₁-C₁₂alkyl, C₁-C₁₂alkoxy or halogen;

C₄-C₂₄cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃); or C₈-C₂₄arylcycloalkyl or C₈-C₂₄arylalkenyl;

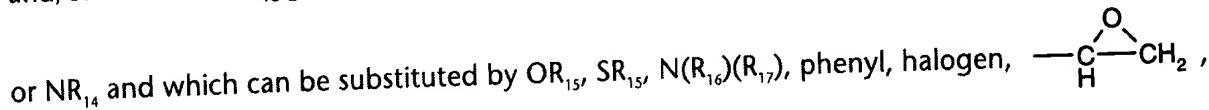
R₁₁ is H, C₁-C₂₀alkyl, C₂-C₂₀alkenyl, C₃-C₈cycloalkyl, phenyl, benzyl or C₂-C₂₀alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH;

R₁₂ and R₁₃ independently of one another are hydrogen, C₁-C₂₀alkyl, C₃-C₈cycloalkyl, phenyl, benzyl or C₂-C₂₀alkyl, which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH; or R₁₂ and R₁₃ together are C₃-C₅alkylene which is uninterrupted or interrupted by O, S or NR₁₄;

Z_1 is C_1 - C_{24} alkyl, which is unsubstituted or substituted once or more than once by OR_{15} , SR_{15} , $N(R_{16})(R_{17})$, phenyl, halogen, CN , $-N=C=A$,



and/or $\text{---C}(\text{A})\text{---N}(R_{18})_2$ or Z_1 is C_2 - C_{24} alkyl which is interrupted once or more than once by O, S

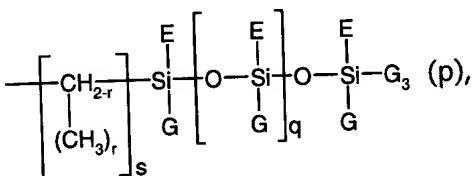
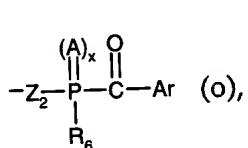
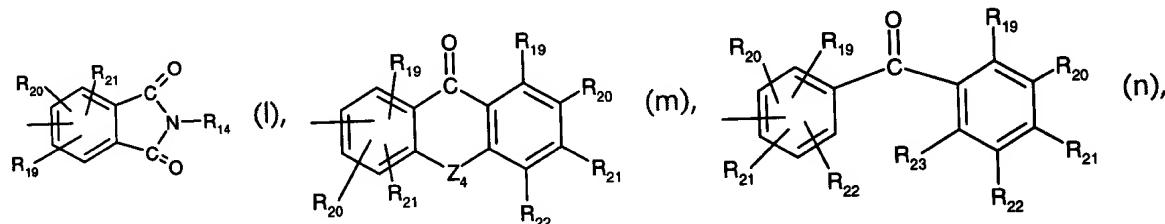
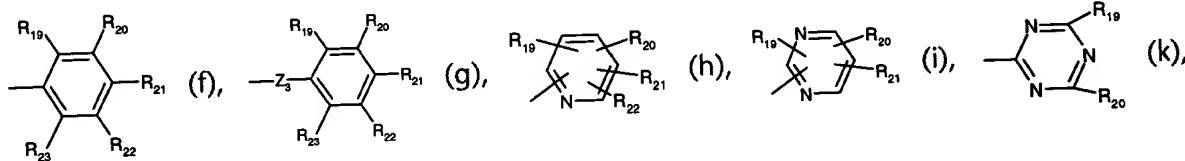


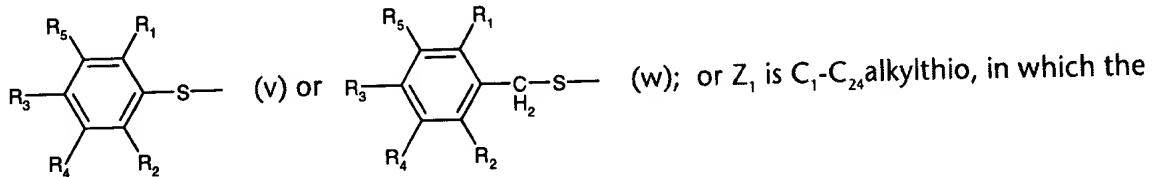
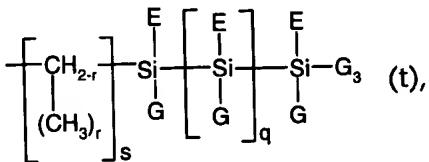
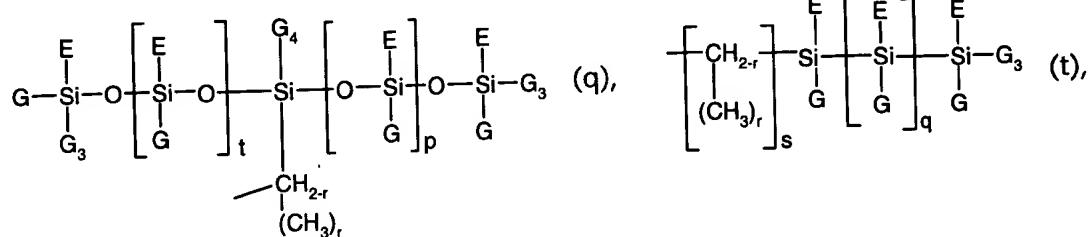
$\text{---C}(\text{A})\text{---R}_{18}$, $\text{---C}(\text{A})\text{---OR}_{18}$ and/or $\text{---C}(\text{A})\text{---N}(R_{18})_2$; or Z_1 is C_1 - C_{24} alkoxy, which is substituted

once or more than once by phenyl, CN , $-N=C=A$, $\text{---C}(\text{H})\text{---CH}_2$, $\text{---C}(\text{A})\text{---R}_{18}$, $\text{---C}(\text{A})\text{---OR}_{18}$

and/or $\text{---C}(\text{A})\text{---N}(R_{18})_2$; or Z_1 is $\text{---C}(\text{A})\text{---OR}_{11}$, $\text{---C}(\text{A})\text{---N}(R_{16})(R_{17})$, $\text{---C}(\text{A})\text{---OR}_{11a}$ or

$\text{---C}(\text{A})\text{---N}(R_{18a})(R_{18b})$; or Z_1 is unsubstituted C_3 - C_{24} cycloalkyl or C_3 - C_{24} cycloalkyl substituted by C_1 - C_{20} alkyl, OR_{11} , CF_3 or halogen; unsubstituted C_2 - C_{24} alkenyl or C_2 - C_{24} alkenyl substituted by C_6 - C_{12} aryl, CN , $(CO)OR_{15}$ or $(CO)N(R_{18})_2$; or Z_1 is C_3 - C_{24} cycloalkenyl or is one of the radicals





alkyl radical is uninterrupted or interrupted once or more than once by nonconsecutive O or S, and is unsubstituted or substituted by OR_{15} , SR_{15} and/or halogen; with the proviso that Z_1 and R_6 are not identical;

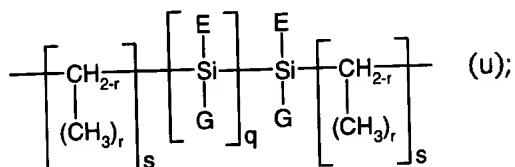
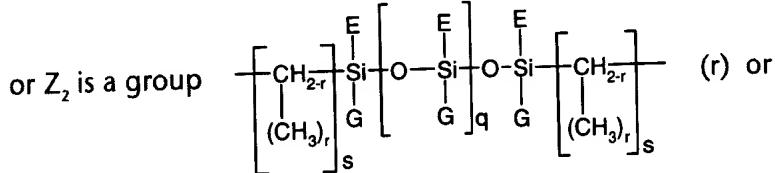
A_1 is O, S or NR_{18a} ;

Z_2 is C_1 - C_{24} alkylene; C_2 - C_{24} alkylene interrupted once or more than once by O, S or NR_{14} ; C_2 - C_{24} alkenylene; C_2 - C_{24} alkenylene interrupted once or more than once by O, S or NR_{14} ; C_3 - C_{24} cycloalkylene; C_3 - C_{24} cycloalkylene interrupted once or more than once by O, S or NR_{14} ; C_3 - C_{24} cycloalkylene; C_3 - C_{24} cycloalkylene interrupted once or more than once by O, S or NR_{14} ; where the radicals C_1 - C_{24} alkylene, C_2 - C_{24} alkylene, C_2 - C_{24} alkenylene, C_3 - C_{24} cycloalkylene and C_3 - C_{24} cycloalkylene are unsubstituted or are substituted by OR_{11} , SR_{11} , $\text{N}(\text{R}_{12})(\text{R}_{13})$ and/or halogen; or Z_2 is one of the radicals



or

, where these radicals are unsubstituted or are substituted on the aromatic by C_1 - C_{20} alkyl; C_2 - C_{20} alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; OR_{11} , SR_{11} , $\text{N}(\text{R}_{12})(\text{R}_{13})$, phenyl, halogen, NO_2 , CN, $(\text{CO})-\text{OR}_{11}$, $(\text{CO})-\text{N}(\text{R}_{12})(\text{R}_{13})$, SO_2R_{24} , $\text{OSO}_2\text{R}_{24}$, CF_3 and/or CCl_3 ;



Z_3 is CH_2 , CH(OH) , $\text{CH(CH}_3)$ or $\text{C(CH}_3)_2$;

Z_4 is S , O , CH_2 , C=O , NR_{14} or a direct bond;

Z_5 is S , O , CH_2 , CHCH_3 , $\text{C}(\text{CH}_3)_2$, $\text{C}(\text{CF}_3)_2$, SO , SO_2 , CO ;

Z_6 and Z_7 independently of one another are CH_2 , CHCH_3 or $\text{C}(\text{CH}_3)_2$;

r is 0, 1 or 2;

s is a number from 1 to 12;

q is a number from 0 to 50;

t and p are each a number from 0 to 20;

E , G , G_3 and G_4 independently of one another are unsubstituted $\text{C}_1\text{-C}_{12}$ alkyl or $\text{C}_1\text{-C}_{12}$ alkyl substituted by halogen, or are unsubstituted phenyl or phenyl substituted by one or more $\text{C}_1\text{-C}_4$ alkyl; or are $\text{C}_2\text{-C}_{12}$ alkenyl;

R_{11a} is $\text{C}_1\text{-C}_{20}$ alkyl substituted once or more than once by OR_{15} or $-\overset{\text{O}}{\underset{\text{H}}{\text{C}}}-\text{CH}_2$; or is $\text{C}_2\text{-C}_{20}$ alkyl

which is interrupted once or more than once by nonconsecutive O atoms and is unsubstituted

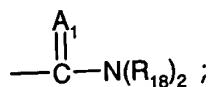
or substituted once or more than once by OR_{15} , halogen or $-\overset{\text{O}}{\underset{\text{H}}{\text{C}}}-\text{CH}_2$; or R_{11a} is $\text{C}_2\text{-C}_{20}$ alkenyl,

$\text{C}_3\text{-C}_{12}$ alkynyl; or R_{11a} is $\text{C}_3\text{-C}_{12}$ cycloalkenyl which is substituted once or more than once by

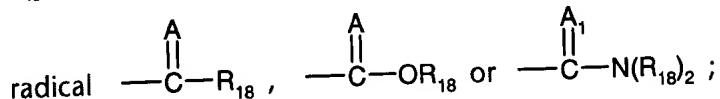
halogen, NO_2 , $\text{C}_1\text{-C}_6$ alkyl, OR_{11} or $\text{C}(\text{O})\text{OR}_{16}$; or $\text{C}_7\text{-C}_{16}$ arylalkyl or $\text{C}_8\text{-C}_{16}$ arylcycloalkyl;

R_{14} is hydrogen, phenyl, $\text{C}_1\text{-C}_{12}$ alkoxy, $\text{C}_1\text{-C}_{12}$ alkyl or $\text{C}_2\text{-C}_{12}$ alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH;

R_{15} has one of the meanings given for R_{11} or is a radical $\begin{array}{c} A \\ \parallel \\ -C-R_{18} \end{array}$, $\begin{array}{c} A \\ \parallel \\ -C-OR_{18} \end{array}$ or



R_{16} and R_{17} independently of one another have one of the meanings given for R_{12} or are a radical



R_{18} is hydrogen, C_1-C_{24} alkyl, C_2-C_{12} alkenyl, C_3-C_8 cycloalkyl, phenyl, benzyl; C_2-C_{20} alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by

OH ;

R_{18a} and R_{18b} independently of one another are hydrogen; C_1-C_{20} alkyl, which is substituted once

or more than once by OR_{15} , halogen, styryl, methylstyryl, $-N=C=A$ or $\begin{array}{c} O \\ \parallel \\ -C-CH_2 \end{array}$; or C_2-C_{20} alkyl,

which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted once or more than once by OR_{15} , halogen, styryl, methylstyryl or

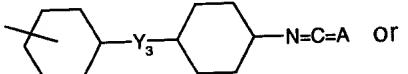
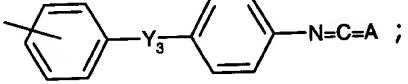
$\begin{array}{c} O \\ \parallel \\ -C-CH_2 \end{array}$; or R_{18a} and R_{18b} are C_2-C_{12} alkenyl; C_5-C_{12} cycloalkyl, which is substituted by $-N=C=A$ or

$-CH_2-N=C=A$ and is additionally unsubstituted or substituted by one or more C_1-C_4 alkyl; or R_{18a}

and R_{18b} are C_6-C_{12} aryl, unsubstituted or substituted once or more than once by halogen, NO_2 ,

C_1-C_6 alkyl, C_2-C_4 alkenyl, OR_{11} , $-N=C=A$, $-CH_2-N=C=A$ or $C(O)OR_{18}$; or R_{18a} and R_{18b} are C_7-

C_{16} aryalkyl; or R_{18a} and R_{18b} together are C_8-C_{16} arylalkyl; or R_{18a} and R_{18b} independently of

one another are  or 

Y_3 is O, S, SO , SO_2 , CH_2 , $C(CH_3)_2$, $CHCH_3$, $C(CF_3)_2$, (CO), or a direct bond;

R_{19} , R_{20} , R_{21} , R_{22} and R_{23} independently of one another are hydrogen, C_1-C_{20} alkyl; C_2-C_{20} alkyl, which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; or R_{19} , R_{20} , R_{21} , R_{22} and R_{23} are OR_{11} , SR_{11} , $N(R_{12})(R_{13})$, NO_2 , CN , SO_2R_{24} , OSO_2R_{24} , CF_3 , CCl_3 , halogen; or phenyl which is unsubstituted or substituted once or more than once by C_1-C_4 alkyl or C_1-C_4 alkoxy;

or in each case two of the radicals R_{19} , R_{20} , R_{21} , R_{22} and R_{23} together form C_1 - C_{20} alkylene which is uninterrupted or interrupted by O, S or -NR₁₄;

R_{24} is C_1 - C_{12} alkyl, halogen-substituted C_1 - C_{12} alkyl, phenyl, or phenyl substituted by OR₁₁ and/or SR₁₁;

with the proviso that R₆ and Z₁ are not identical;

by reacting an alkylacylphosphine compound of formula I according to claim 1 with a halide of the formula (VI)

Z₁-X (VI), wherein

X is Cl or Br;

in a molar ratio of about 1:1, optionally in a solvent, at a reaction temperature from about -60°C to about +120°C to give a phosphine compound of formula III wherein x is 0, and optionally, subsequent oxidation or sulfurization of the resulting phosphine compound to give the corresponding oxide or sulfide wherein x is 1 and A is O or S.